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BARYKIN, and TUNKEL', I., Ogonek, No 50, Dec 71, p 11

Petya did not complain and only looked at the world with puzzled, sad eyes. The entire arsenal of weapons available to today's therapy was put in motion. "Without effect" was the sharp verdict entered in the unimpassioned case history. Behind these two words there was the family's grief, the tragedy of the boy himself.

...Yuriy Mikhaylovich Lopukhin headed the group of surgeons. The operation was entrusted to Yuriy Ivanovich Morozov. Having taken the scalpel, Morozov was sure of himself. He had occasion to perform many operations, which were not merely complicated, but often very rare and experimental. He is referred to as the "golden scalpel." Yuriy Ivanovich more than once boldly engaged in a personal combat against diseases and conquered them. His boldness came from experience. Morozov remembered the words he had once heard from A. A. Vishnevskiy: "A surgeon's boldness should not exceed his skill." Yuriy Ivanovich now thought out the entire operation in his mind, i.e., from the first superficial incision to the concluding suture.

...Morozov once again examined the thymus prepared for transplantation. To this day far from everything is known about the thymus. "This gland is a puzzle," one of the professors told us. It had already been proved, however, that the first days and months of man's life are the periods of its

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greatest activity. The thymus is a unique starter, which includes many life-support systems. It adjusts them and gives them a definite tone.

As a rule, a man with a normal thymus is prepared for a fight against many diseases, i.e., he has a reliable immunity. But diseases do not leave the man whose thymus is underdeveloped in peace.

... In the history of this disease, which goes back many centuries, the year 1941 was marked by an important circumstance. The French physician Louis-Bar described this disease for the first time. Prior to that date the Louis-Bar syndrome had not been recorded by physicians, remained unidentified, and had not been diagnosed. ("Encephalitis," some said. "Something unexplainable," others shrugged their shoulders.) Alas, they knew very well that there was a disease that caused a child to be bedridden at about the age of 5, a disease in which progressive ataxia, i.e., failure of motor coordination, began. Ataxia was the second symptom in the description of this disease. Louis-Bar was the first to note the inevitably frequent, incessant infectious diseases.

In the Louis-Bar syndrome the tiny patient loses his strength slowly with an ominous consistency, and not only physical strength. Physicians note that even the child's mental development remains retarded. He sharply lags behind children his own age. The gap between age and maturation increases every year.

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Another landmark, i.e., the year 1971, has now appeared in the history of this disease. This date is connected with the work of Soviet physicians, primarily with the names of the academicians of the Academy of Medical Sciences USSR Yuriy Mikhaylovich Lopukhin and Candidate of Medical Sciences Yuriy Ivanovich Morozov.

Yu. I. Morozov was the first in the world to perform such an operation. He implanted a healthy thymus with the bone marrow contained in the breast bone in a child born with an underdeveloped thymus. Later on, when this and subsequent operations were evaluated, the following was noted: "The immediate and remote results proved to be good..." Particular emphasis was placed on the great scientific value of the work on thymus transplantation, which is now being successfully conducted at the Department of Clinical and Experimental Surgery at the Second Moscow Medical Institute of the Ministry of Health RSFSR.

"The problem has now expanded and many researchers have begun to work on its solution. Obviously, only collective efforts can bring success," Yu. M. Lopukhin says. Talented professors, i.e., the immunologist R. V. Petrov and the biophysicist S. S. Vasilevskiy, are conducting research that has yielded important results. Our young colleagues are also helping a great deal. This enables us to organize our work broadly and systematically... The thymus is now being thoroughly investigated in the clinic. Lectures

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in immunology are given for the first time to students in senior courses. "Exemption from taxes," this is the literal translation of the word "immunity." But in what does this "exemption" lie? After all, the thymus -- the switch of the immune systems -- is active only during the first years of life. Some believe that cells together with the blood stream enter the thymus, take a "course in immunological sciences" here, and, after completing their education, return to their places to resist a possible attack of microbes and to free man from the heavy taxes that microbes impose on him. Others think that the thymus sends its "teachers" all over the organism and they develop the immunological capabilities of the cells on the spot. Still others say that the thymus is simply a gland that produces a hormone and, after developing and sending its "agents," it dies away.

Whatever the explanation, the role of the thymus is an important one. The knowledge and experience of Lopukhin, Petrov, Morozov, Vasilieyskiy, and of their colleagues and assistants are directed toward revealing all the secrets and capabilities of the thymus and toward finding the method of controlling the host of diseases described by Louis-Bar.

"A great deal depends on age. If the disease can be discovered at its early stage, when the child is 1 or 2-years old, one can speak with a great degree of assurance of the probability of an almost complete recovery,"

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Yu. M. Lopukhin continues. "However, it is not merely a matter of the clinical effect. It has already been proven. The work on thymus transplantation and the whole gamut of investigations yield significant scientific results. Rem Viktorovich Petrov believes, and we are beginning to share his viewpoints with increasingly greater confidence, that the thymus is not only a starter. It is also a switch. After consolidating the immunological foundations, it begins to exclude the proteins that are inherent only in man's embryonic development, but are harmful and even dangerous to the adult, from the activity of the organism. Does this mean that in a human organism with an underdeveloped thymus these harmful proteins continue to be active?

Hence, does it also become possible to affect the embryonic protein? This is not ruled out either. The biophysicist Sergey Serafimovich Vasilevskiy has already discovered in patients suffering from the Louis-Bar syndrome a protein, which, at first glance, has been given an ingenious name, i.e., "beta-feta-protein," and the possibility of treating some diseases is seen in it.

In medicine a discovery is primarily a humane act. It can have not only practical, but also scientific prospects, as in this case. It is already a fact that it gives remarkable clinical results. But here, in the Department of Clinical and Experimental Surgery at the Second Moscow Medical Institute

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another aspect of the discovery can also be seen, i.e., tears of joy.

"We are extremely fortunate to have found this clinic, these kind people," the mother says through tears.

At this moment she again remembers the sleepless nights, the endless attempts at treatment with a great variety of drugs, and simply the hopes for a miracle...

Petya is already walking. He made the first step on his own on the tenth day after the operation.

The ward which housed the nine children that had undergone surgery, the ward to which even experienced physicians came with unceasing wonder as at their first lesson, is empty. The tiny patients went home to Frunze, to Magnitogorsk, to Orel...

The following notes appeared in their case histories: "There were no infectious diseases following surgery," "he is active," and "abatement of ataxia noted."

Yuriy Mikhaylovich Lopukhin, Yuriy Ivanovich Korozov, and their colleagues are working to save today's and, even more, tomorrow's patients.

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1/2 024 UNCLASSIFIED PROCESSING DATE--02OCT70  
TITLE--SMALL SIZE OF PULMONARY HEART -U-

AUTHOR-(03)-MEDVEDEV, YE.S., PODOLYAN, L.M., TUNKEL, R.S.

COUNTRY OF INFO--USSR

SOURCE--TERAPEVTICHESKIY ARKHIV. 1970, VOL 42, NR 3, PP 55-58

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--AUTOPSY, HEART DISEASE, LUNG, RESPIRATORY INSUFFICIENCY,  
HYPERTROPHY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--1986/0823

STEP NO--UR/0504/70/042/003/0055/0058

CIRC ACCESSION NO--AP0102785

UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0102785

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHORS MEASURED TELERCENTENOGRAPHICALLY THE HEARTS IN 70 PATIENTS WITH CARDIO PULMONARY INSUFFICIENCY AND STUDIED AUTOPSY MATERIAL OF 60 CADAVERS OF CHRONIC NONSPECIFIC DISEASES OF THE LUNGS IN DIFFERENT DEGREES OF CARDIO PULMONARY INSUFFICIENCY. A GROUP OF PATIENTS WITH MITRAL STENOSIS WAS USED AS CONTROL AND AUTOPSY MATERIAL STUDIED. THE SIZE OF THE HEART IN PATIENTS WITH CARDIO PULMONARY INSUFFICIENCY PROVED TO BE MUCH SMALLER THAN THAT IN PATIENTS WITH MITRAL STENOSIS. THE REVEALED HYPERTROPHY OF THE VENTRICULAR WALLS, ESPECIALLY OF THE RIGHT ONE, THOUGH REVEALED IN A DECOMPENSATED PULMONARY HEART PLAYS BUT INSIGNIFICANT ROLE IN THE FORMATION OF THE SIZE OF THE HEART. A SMALL HEART IN PULMONARY EMPHYSEMA IS EXPLAINED BY A REDUCED BLOOD SUPPLY TO THE HEART AND A DROP IN DIASTOLIC FILLING OF THE CAVITIES DUE TO A DECREASED SUCTION OF THE BLOOD FROM THE MAJOR VEINS BY THE CHEST, A FALL OF THE VENOUS TONE, DECELERATION OF THE PERIPHERAL VENOUS CIRCULATION AND OVERFILLING OF THE PERIPHERAL DEPOT WITH THE VENOUS BLOOD.

UNCLASSIFIED



USSR

UDC: 621.375.82

ARUTYUNYAN, A. G., TUNKIN, V. G., and CHIRKIN, A. S.

"Light-Power Interferometer with High Resolution for Measuring Spatial Coherence of Optical Radiation"

Moscow, V sb. Kvant. elektronika (Quantum Electronics--collection of works) "Sov. radio," No 1(13), 1973, pp 111-113 (from RZh--Fizika, No 7, 1973, Abstract No 7D1069)

Translation: The design of an interferometer constructed to measure small radii of spatial coherence of light radiation, which has a number of advantages over the Young and Mach-Zehnder interferometers used for the same purpose, is described. Results are given of measurements using the described interferometer for the space correlation function of helium-neon laser radiations and aluminum-yttrium garnet laser oscillations. These latter oscillations had a coherence radius of  $\sim 0.1$  mm in the oscillation of many transverse modes for a beam radius of 5 mm. Authors' abstract

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USSR

UDJ 621.378.6

TUNKIN, V.G., USMANOV, T., SHAKIROV, V.A.

"Fifth Harmonic Generation In A Picosecond Pulsed Laser"

Kvantovaya elektronika (Quantum Electronics), Moscow, No 5(11), pp 117-118

Abstract: The experimental results are presented of cascade generation of the fifth harmonic of a neodymium laser operating in a regime of self-synchronization of modes. Intensive coherent radiation with a 200 kw power at  $\lambda_5 = 0.212$  micron was obtained as a result of a synchronous four-frequency interaction in calcite ( $\text{CaCO}_3$ ) at room temperature. The experimental equipment used contains the following: 1) Picosecond laser; 2) IKS-2 filter; 3) Photodiode and strobe-pulse former; 4) KDP-I crystal; 5) KDP-II crystal; 6) PS-11 filter; 7) Calcite crystal; 8) Quartz crystal; 9) Photomultiplier-39A; 10) Registration scheme; and 11) ISP-22 spectograph. The authors thank S.A. Akhmanov and A.S. Chirkin for constant interest in the work, helpful council, and discussion of the results. 2 fig. 5 ref. Received by editors, 21 April 1972.

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Acc. Nr: ~~AP~~0038060

Ref. Code: UR 0056

PRIMARY SOURCE: Zhurnal Eksperimental'noy i Teoreticheskoy  
Fiziki, 1970, Vol 58, Nr 1, pp 191-198

STATISTICS OF PHOTO-COUNTS OF NONLINEARLY  
TRANSFORMED LIGHT

Tunkin, V. G.; Chirkin, A. S.

Results are presented of a theoretical investigation of the statistical properties of the second optical harmonic produced in a homogeneous nonlinear crystal. Expressions are obtained for the intensity and counting distribution of the harmonic excited by laser and thermal radiation. Quasistatic and nonstationary excitation conditions are considered. The effect of incomplete spatial coherence of the fundamental frequency on the statistical properties of the second harmonic is analyzed. It is found, in particular, that the temporal statistical properties of the harmonic may significantly depend on spatial coherence of the fundamental radiation. In order to characterize the counting distribution a parameter is introduced which is related only to the relative fluctuations of the radiation intensity.

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USSR

UDC 669.183.4:538.22

REZNIK, I. G., SUKHOTIN, B. N., and TUNKOV, V. P., "Serp i Molot" Metallurgical Plant

"Effect of the Technology of Smelting Low-Carbon Electric Steel on the Magnitude of the Coercive Force"

Moscow, Metallurg, No 12, Dec 70, pp 15-17

Abstract: An investigation was made of the effect of the technology of smelting type E low-carbon electric steel in 50- and 70-ton open-hearth furnaces on the magnitude of the coercive force. The effects of C and S content, oxidation rate, duration of bath boiling, and the inactive bath condition on the coercive force were determined by the correlation method. It was found that for producing steel with low coercivity, the C content of the metal at the moment bath smelting is completed must be 0.8-0.9% and that the period of active boiling should be 60-70 min with an average oxidation rate of 0.012-0.014% of C/min. The desulfurization process and the heating of the metal up to 1630°C must be completed before the beginning of the inactive bath (before a bath content of 0.12-0.10% of C) and the addition of ore during the final melting period.

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013 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--OPTIMUM LIMITS OF THE MELT DOWN CARBON CONTENT -U-  
AUTHOR--(05)--YELANSKIY, G.N., KUDRIN, V.A., MOTOV, V.I., GUTNOV, R.B.,  
TUNKOV, V.P.  
COUNTRY OF INFO--USSR  
SOURCE--STAL' 1970, 30(2), 123-6  
DATE PUBLISHED--70  
SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR  
TOPIC TAGS--OPEN HEARTH FURNACE, METAL MELTING, CARBON STEEL, SULFUR,  
PHOSPHORUS  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1994/1948 STEP NO--UR/0133/70/030/002/0123/0126  
CIRC ACCESSION NO--AP0115756  
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--13NOV70

IRC ACCESSION NO--AP0115756

ABSTRACT/EXTRACT--(U) GP-0-

75 TON EXPTL. OPEN HEARTH HEATS, SHOWED THAT A MELT DOWN C CONTENT GREATLY DIFFERENT FROM ITS CONTENT OF FINISHED STEEL IS EQUALLY HARMFUL FOR ALL TECHNOLOGICAL OPERATIONS, BE IT TOO HIGH OR TOO LOW. AN EXCESSIVE C CONTENT SPECIFIES THE LENGTH OF THE WHOLE BOILING PERIOD, INCREASES ORE CONSUMPTION AND RAISES TAPPING TEMP. WITHOUT AFFECTING THE DECARBURIZATION RATE AND S AND P CONTENT OF FINISHED STEEL. FOR 0.10-0.65PERCENT C STEELS, HEATS HAVE TO MELT WITH A C EXCESS OF 0.35-0.65PERCENT ABOVE THE FINAL.

UNCLASSIFIED

1/2 018 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--DEOXIDATION OF CARBON AND LOW ALLOY OPEN HEARTH STEELS -U-  
AUTHOR--(03)-YAVOYSKIY, Y.I., TUONG, V.M., GOROKHOV, L.S.  
COUNTRY OF INFO--USSR  
SOURCE--SAL' 1970, 30(3), 228-33  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR  
TOPIC TAGS--LOW ALLOY STEEL, CARBON STEEL, NONMETALLIC INCLUSION, FERROUS  
LIQUID METAL, STEEL DEOXIDATION  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1996/1994 STEP NO--UR/0133/70/030/003/0228/0233  
CIRC ACCESSION NO--AP0118953  
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0112953

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FORMATION OF NONMETALLIC INCLUSIONS DIRECTLY AFTER ADDN. OF AL AND SI TO MOLTEN METAL, ABOVE ITS LIQUIDUS, AND BETWEEN ITS LIQUIDUS AND SOLIDUS WAS CALCD. THERMODYNAMICALLY BY USING EQUATIONS  $\log K_{\text{SUB SI}} = \log (i_{\text{SI}})$   $(\alpha_0)$   $\text{PRIME}_1 = \log K_{\text{SUB SI}} - (27860 - T) / 10.28$  AND  $\log K_{\text{SUB AL}} = \log (i_{\text{AL}})$   $\text{PRIME}_2 - (\alpha_0 \text{ SUBO})$   $\text{PRIME}_3 = \log K_{\text{SUB AL}} - (82580 - T) / 10.28$  PLUS 33.96 BY ASSUMING THAT EQUIL. CONST. OF THE DEOXIDN. REACTION HOLD DOWN TO SOLIDUS TEMP. AND THAT DIFFUSION PROCESS IN LIQ. METAL IN INGOT MOLDS ASSURE MASS EXCHANGE NECESSARY FOR NONMETALLIC FORMATION. THE RESULTS WERE CHECKED BY O ACTIVITY AND O CONTENT DETNS. OF OPEN HEARTH PRODUCTION HEATS. THE FORMATION OF THE LATTER 2 GROUPS OF NONMETALLICS CAN BE GREATLY REDUCED BY THE USE OF THE PERMISSIBLE MAX. OF THE DEOXIDIZER IN THE FURNACE OR LADLE AND PROTECTING THE STREAM OF METAL FROM SECONDARY OXIDN. CONVENTIONAL STIRRING SPEEDS THE REMOVAL OF AL SUB2 O SUB3 CONTG. INCLUSIONS, WHICH CAN BE VERY FAST, AND RETARDS RISING OF SILICATES. THE ORDER OF DEOXIDIZERS ADDN. IN THE FURNACE DOES NOT AFFECT THE EXTENT OF DEOXIDN. AND ONLY SLIGHTLY AFFECT THE RATE OF NONMETALLIC REMOVAL.

UNCLASSIFIED



USSR

UDC: 621.398

MIKHAYLOV, I. I., TUPAS, V. I., STULOV, V. A., SHCHEDROV, N. I.,  
and PUKHOVICH, V. M. /Automation Institute/

"Frequency Selector Device"

USSR Author's Certificate No 299945, filed 8 Dec 69, published  
27 May 71 (from RZh-Avtomatika, telemekhanika i vychislitel'naya  
tekhnika, No 12, 1971, Abstract No 12A237P)

Translation: A frequency selector device contains an oscillatory circuit, a nonlinear frequency-dependent circuit, and a rectifier. It differs in that, with the purpose of providing band pass stability and a constant output signal level, the nonlinear frequency-dependent circuit is in the form of a series-connected differentiating and integrating RC network, while the differentiating circuit is connected with autotransformer coupling to the input of the oscillatory circuit, whose load is connected in series to the load of the rectifier for the voltage picked up from the secondary winding of the oscillatory circuit.

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USSR

UDC: 621.396.662.4

MIKHAYLOV, I. I., TUPAS, V. I., STULOV, V. A., SHCHEDROV, N. I., PUKHOVICH,  
V. M., Institute of Automation

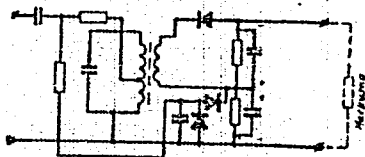
"A Frequency-Selective Device"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki,  
No 12, Apr 71, Author's Certificate No 299945, Division H, filed 8 Dec 69,  
published 26 Mar 71, p 207

Translation: This Author's Certificate introduces a frequency-selective device which contains a tank circuit, a nonlinear frequency-dependent circuit and rectifiers. As a distinguishing feature of the patent, in order to stabilize the passband and make the output signal level constant, the nonlinear frequency-dependent circuit is made in the form of a differentiating RC network and an integrating RC network connected in series. The differentiating network is connected by autotransformer coupling to the input of the tank circuit, and the integrating network is connected to the input of a rectifier whose load is connected in series with the load of the rectifier for the voltage taken from the secondary winding of the tank circuit.

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MIKHAYLOV, I. I., USSR Author's Certificate No 299945



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USSR

UDC 51

TUPCHIYENKO, A. V.

"Optimization of the Control of Stochastic Flows"

V sb. Mat. metody issled. i optimiz. sistem (Mathematical Methods of Investigation and Optimization of Systems -- collection of works), Kiev, 1971, pp 50-63 (from RZh-Kibernetika, No 9, Sep 72, Abstract No 9V517)

No abstract

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USSR

UDC 532.526

TUPICHENKOV, A. A., FAFURIN, A. V., KUZ'MIN, V. V.

"Hydrodynamic Characteristics of a Flow in the Initial Sections of Flow-Meter Devices"

Tr. metrol. in-tov SSSR (Works of the Metrology Institutes of the USSR), 1972, No. 135(195), pp 79-87 (from RZh-Mekhanika, No 6, Jun 72, Abstract No 6B764)

Translation: The development of a turbulent boundary layer in the initial section of a tube was studied considering the roughness of the walls. The theoretical study was conducted from the posits of boundary layer theory. Tubes with a natural and artificial roughness were used in the experiments, where the magnitude of the roughness was  $k_{\alpha}/r_0 = 10^{-3}$  and  $k_{\alpha}/r_0 = 1.44 \cdot 10^{-2}$ . The Reynolds number varied over the range  $5.1 \cdot 10^4 - 3.4 \cdot 10^5$ . The computational method proposed is in good agreement with experimental results. 7 ref. Authors abstract.

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USSR

UDC 681.121

KUZ'MIN, V. V., FAFURIN, A. V., TUPICHENKOV, A. A., MATVEYEV, Yu. F.

"The Problem of Determination of Optimal Points for Installation of Flow Rate Measuring Devices Considering Wall Roughness"

Tr. Metrol. In-tov SSSR [Works of Metrology Institutes, USSR], 1972, No 135 (195), pp 98-106, (Translated from Referativnyy Zhurnal, Metrologiya i Izmeritel'naya Tekhnika, 1972, No 5, Abstract No 5.32.734).

Translation: Results are presented from experimental determination of lengths of sectors of hydrodynamic stabilization with even distribution of velocity at the inlet to a tube. The experiments were performed using water in the range of Reynolds numbers from  $5.1 \cdot 10^4$  to  $3.4 \cdot 10^5$ , both in the smooth flow mode and with natural and artificial roughness

$$\left( \frac{k_a}{r_0} = 10^{-3} \text{ и } \frac{k_a}{r_0} = 1.44 \cdot 10^{-2} \right) \quad \text{and} \quad \frac{k_a}{r_0} = 10^{-3} \text{ и } \frac{k_a}{r_0} = 1.44 \cdot 10^{-2}$$

The results show that an increase in roughness causes a decrease in the length of the initial sector. 5 Figures; 18 Biblio. Refs.

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USSR

UDC: 681.121

KHUSAINOV, N. M., TUPICHENKOV, A. A.

"Principles of Organizing a Facility for Precision Measurements of Flow Rates, Quantities and Volumes of Liquids and Gases"

V sb. Tochnoye izmereniye raskhodov i kolichestv veshchestv (Precision Measurement of Rates of Flow of Substances and Their Quantities--collection of works), Vyp. 122 (182), Moscow-Kazan', 1970, pp 5-12 (from RZh-Metrologiya i Izmeritel'naya Tekhnika, No 9, Sep 70, Abstract No 9.32.708)

Translation: Specific proposals are given for improving a facility for monitoring the operation of instruments for measuring the rate of flow, quantity and volumes of materials. These proposals cover the organizational and the scientific and technical aspects of the problem. It is concluded that a nation-wide metrological center should be set up which is provided with the appropriate scientific and experimental base for systematic research and development in scientific, technical and procedural areas. Two illustrations, two tables.

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USSR

UDC 620.197.3:669.295

TUPIKIN, YE. I., and KLYUCHNIKOV, N. G., Moscow State Pedagogical Institute  
Imeni V. I. Lenin

"Effect of Some Nitrogen-Containing Organic Substances on the Corrosion of  
OT<sub>4</sub> Titanium Alloy in Hydrochloric Acid"

Moscow, Zashita Metallov, Vol 9, No 1, Jan-Feb 73, pp 103-105

Abstract: A gravimetric investigation was made of the affect of some nitroso- and nitro-compounds on the corrosion properties of OT<sub>4</sub> titanium alloy in solutions of hydrochloric acid of different concentrations and temperatures. Data show that the most effective inhibitor among the investigated compounds is n-nitroso-dimethylaniline, which protects the OT<sub>4</sub> alloy in a wide temperature and acid concentration interval. Inhibitors which protect the alloy against corrosion displace the stationary corrosion potentials into the region of high positive values. Retarders, the effectiveness of which is low, have practically no effect on stationary potentials. An explanation is given of the low protective properties of some nitro-compounds and of the high effectiveness of other inhibitors. One table, six bibliographic references.

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USSR

UDC 620.197.3:669.29

TUPIKIN, YE. I., KLYUCHNIKOV, N. G., Moscow Pedagogic Institute imeni V. I. Lenin

"Effect of Cupferron, Dinitrobenzene, and Picric Acid on the Corrosion of OT4 Titanium Alloy in Hydrochloric and Sulfuric Acid"

Moscow, Zashchita Metallov, Vol 8, No 6, 1972, pp 713-714

Abstract: In connection with the fact that oxidizing agents are effective inhibitors of acid corrosion of titanium, m-dinitrobenzene, picric acid, and cupferron in concentrations of 3 millimoles/liter were investigated as inhibitors of OT4 titanium alloy corrosion in solutions of sulfuric and hydrochloric acids of different concentration and at different temperatures. At room temperature the experiments lasted 24 hours, and at higher temperatures, 6 hours. The corrosion rate was determined by the gravimetric method by 3-5 parallel measurements the accuracy of which was  $\pm 10\%$ . The experimental data are tabulated. After holding for 6 hours in 3 and 5 normal solutions of hydrochloric acid inhibited by picric acid at  $80^\circ$  the specimens were coated with a yellow brown film. After holding the specimens in inhibited solutions of the investigated acids at other temperatures where the inhibitors protect the OT4 alloy well, they have the same color as before the experiment. The investigated compounds shift the stationary corrosion potentials noticeably toward the positive values only

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USSR

TUPIKIN, YE. I., et al., Zashchita Metallov, Vol 8, No 6, 1972, pp 713-714

in solutions where they have a high protective effect. The inhibiting properties of m-dinitrobenzene, picric acid and cupferron are explained by the fact that they put the alloy in the passive state as a result of shifting the stationary potentials into the high positive range and also promote the formation of a dense oxide film on the surface of the alloy protecting it from corrosion. Cupferron can also give an insoluble compound with trivalent titanium ions [Kratkaya khim. entsiklopediya, Moscow, No 2, 894, 1963], and picric anions are adsorbed on the positively charged surface of the titanium [L. I. Antropov, Ukr. khim. zh., No 29, 555, 1963].

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USSR

UDC 620.197.3

TUPIKIN, YU. I., KLYUCHINOV, N. G., and BERZILINA, M. K., Moscow State Pedagogical Institute imeni V. I. Lenin

"Protective Properties of Nitro and Nitroso Compounds Against Corrosion of OT4 Titanium Alloy in Acids"

Moscow, Zashchita Metallov, Vol 10, No 1, Jan-Feb 74, pp 65-69

Abstract: Considering earlier published data, this article studies the relationship between the nature of the functional groups, the structure of nitro and nitroso compounds and their inhibiting effect on the corrosion of OT4 alloy in hydrochloric and sulfuric acids. The protective properties are found to depend on the oxidation properties and mutual placement of functional groups in the molecule of the inhibitor. Picric acid and p-nitrosodimethylaniline are the most effective corrosion inhibitors for OT4 alloy, because p-nitrosodimethylaniline has a high ox-red potential, begins to reduce at high positive values of potential on the OT4 alloy and has a high limiting reduction current. Picric acid has the highest reduction current and high ox-red potential.

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USSR

UDC 539.216.2:621.795.12

TIPTKOV, YU.G.

"Reproducibility Of Electrical Characteristics Of Film On A Tantalum Backing"

V sb. Materialy nauch.-tekhn.konf.Leningr. elektrotekhn.in-ta svyazi (Materials Of Scientific-Technical Conference Of Leningrad Electrical Engineering Institute Of Communications--Collection Of Works), Issue 4, Leningrad, 1971, pp 3-6 (from RZh--Elektronika i yeye primeneniye, No 3, March 1972, Abstract No 3A289)

Translation: It is shown that the 2-discharge method of cathode sputtering, during which ion bombardment of the substrate is obtained in the process of depositing a film as the result of an additional discharge, assures production of conductive tantalum films and resistance tantalum-nitride films reproducible with respect to electrical properties. M.V.

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- 184 -

USSR

UDC 51:155.001.57:681.3.06

DADAMYAN, G. G., DOMNIN, B. A., SEMENOV, A. I., TUPISYN, V. G.

"Some Approaches to Formalization of Decision Making Processes in Organizational Structures"

Modelir. Sots. Protsessov [Modeling of Social Processes -- Collection of Works], Moscow, Nauka Press, 1970, pp 119-138 (Translated from Referativnyy Zhurnal Kibernetika, No 3, 1971, Abstract No 3 VS69 by M. Chelyshev).

Translation: The problem of decision making in organizations of various degrees of complexity is studied. Any organization consists of a system with definite, regular structural relationships between hierarchical levels of the administration and functional links of the organization. The concept of the expert as a person or group of persons responsible for decision making at a certain level of the hierarchy in the organization is introduced. Given the levels of the hierarchy of the organization at which decisions are made and the number of alternatives presented to the expert at each level, it becomes possible in principle to construct decision networks modeling the process of decision making in the organization. The purpose of the decision networks is to reflect the entire set of decisions or all possible flows of decisions leading to an unambiguous answer to the question included in a problem. As the process of decision making

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- 33 -

USSR

UDC 51:155.001.57:681.3.06

DADANYAN, G. G., DOMNIN, B. A., SEMENOV, A. I., TUPISYN, V. G., Modelir. Sots. Protsessov, Moscow, Nauka Press, 1970, pp 119-138.

is formalized, it is assumed that the selection of alternatives by an expert is determined by the preceding trajectory of a document and the induced hypothesis concerning the further path of documents in the organization. The structure of a graph illustrating the decision network is analyzed. The graph of the decision network is characterized by the following conditions: 1) each point connects to at least two lines (except for the root); 2) the "tree" should have no closed loops. This method of modeling of decision making processes is understandable and convenient. It must be noted that the use of decision networks produces only an indirect economic effect, in that it may lead to efficient arrangement and control of the organization being studied.

2/2

USSR

UDC: 669.185.1

KOLGANOV, G. S., MATUKHNO, G. G., TUPITSA, V. I., PORKHUN, V. G.,  
SHEMET, G. A., OMES', N. M.

"Improvement of the Technology of Production of Type 07T1 Steel"

Moscow, Metallurg, No 10, Oct 73, pp 19-20.

Abstract: The Krivorog Metallurgical Plant has begun producing type 07T1 steel to replace type KOM steel for the manufacture of bailing wire. The new steel is made in 130-ton converters by the standard technology for manufacture of killed steel, with the maximum quantity of slag run off after completion of blowing. The remaining slag is thickened by addition of 1-1.5 t lime. The metal is tapped at a carbon content of 0.06-0.9%, at 1590-1605° C. The metal is deoxidized in the ladle with titanium sponge or ferrotitanium. During teeming of the steel, when the adjustable head is 1/2 full, liquid aluminum is added to the surface of the metal. The introduction of this step to the technology has reduced total reject rate for 07T1 steel from 1.50 to 0.45%. The quantity of nonmetallic inclusions in the metal is not increased.

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- 4 6 -

TUPITSIN, I. A.

Acc. Nr: AP0049366 Abstracting Service:  
CHEMICAL ABST. 5/70

Ref. Code: UR0051

2

95176k Lasing and spectral characteristics of some polymethine dyes. Bonch-Bruyevich, A. M.; Zatssepina, N. N.; Bazumova, T. K.; Rubanova, G. M.; Tupitsin, I. A.; Shuva-lova, V. N. (USSR). *Opt. Spektrosk.* 1970, 28(1), 100-4 (Russ). Lasing was followed for a series of polymethine dyes on excitation by a ruby laser. The absorption and fluorescence band positions, stability, and the relative transformation coeffs. of the pumping energy are tabulated. For cryptocyanine (I), dicarbocyanine (II), and tricarboyanine, the lasing characteristics are given. The quantum yields and fluorescence spectra are almost independent of the dielec. const. of the solvent; the quantum yields increase with the solvent viscosity. The transformation coeffs. of I and II in EtOH decrease with the no. of the excitation pulse, when the laser emits several pulses in a flash, proceeding in  $\sim 100 \mu\text{sec}$ . The degree of the decrease depends on the excess of the excitation power of the laser over the threshold of the generation excitation of the dye.

P. Adamec

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REEL/FRAME  
19801904

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USSR

UDC: 621.396.96:621.391.837.1

VERENTSOV, B. A., KRASYUK, N. P., TUPITSYN, L. A., SHAPERIN, I. L.

"Defining Characteristics for Radar Recognition of Objects"

Tr. Sev.-Zap. zaoch. politekhn. in-t (Works of the Northwest Polytechnical Correspondence Institute), 1972, No 20, pp 5-8 (from RZh-Radiotekhnika, No 12, Dec 72, abstract No 1268 [résumé])

Translation: The authors examine selection of optimum parameters of a radar signal reflected from a target, where these parameters are typical characteristics of an observed class of objects. It is shown that there is an optimum duration for the probe signal which depends on the structure of the object. Data are given from corresponding experiments.

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- 91 -

USSR

UDC: 623.962.396

VARENTSOV, B. A., KRASYUK, N. P., TUPITSYN, L. A., SHAPERIN, I. L.

"Experimental Studies of the Radar Characteristics of Objects by the Method of Hydroacoustic Modeling"

Tr. Sev.-Zap. zauch. politekhn. in-t (Works of the Northwest Polytechnical Correspondence Institute), 1972, No 20, pp 13-15 (from RZh-Radiotekhnika, No 12, Dec 72, abstract No 12G33 [résumé])

Translation: The paper describes an equipment complex for studying the radar characteristics of different objects by methods of hydroacoustic modeling. The measurement procedure is given.

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USSR

UDC 669.715.004.82

TUPETSYN, V.V.

"Improvement of the Production of Secondary Aluminum"

Tsvetnye Metally, No 8, 1971, pp 46-48

Abstract: The reasons for the poor quality of scrap and waste arriving at metallurgical plants are discussed. A number of measures are suggested for the organization of collection and delivery of scrap and waste to the reprocessing point. Techniques and technology for the production of secondary aluminum are discussed, and the reception and storage of scrap and waste arriving at metallurgical plants and refining of alloys are considered.

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- 3 -

Vector Studies

USSR

UDC 595.771-119(574)

TUPITSYN, Yu. N., and DUBITSKIY, A. M., Eastern Kazakhstan Sanitary Epidemiological Station, Ust'-Kamenogorsk, and Institute of Zoology, Academy of Sciences Kazakh SSR, Alma-Ata

"Detection in the Kazakh SSR's Fauna of a New Subgenus and Species of Blood-Sucking Mosquito *Aedes (Stegomyia) galloisi*, Yamada, 1921"

Moscow, Meditsinskaya Parazitologiya i Parazitarnyye Bolezni, Vol 41, No 1, Jan/Feb 72, pp 106-107

Abstract: Two female and 1 male *Aedes (Stegomyia) galloisi* were found for the first time in Kazakh SSR at the end of June 1971 during mowing of grass around test ponds in the Uba and Khamir River basins. This confirms previous probable catches of this species, outside its normal range, in southern areas of eastern Kazakh SSR. It was postulated that the mosquitoes originated here rather than being imported from areas within the normal range.

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USSR

UDC 595.771

DUBITSKIY, A. M., and ~~TUPITSIN~~, YU. N., Institute of Zoology,  
Academy of Sciences, Kazakh SSR, Alma Ata

"Description of the Larvae of Aedes (O.) rempeli Vockeroth, a New  
Species Among the USSR Fauna"

Leningrad, Parazitologiya, No 2, 1970, pp 171-174

Abstract: The 4th instar of this mosquito, which was recently found for the first time in Eastern Kazakhstan and in the vicinity of the diamond mines in the Yakutsk ASSR (Aykhel), is described. The new species is classified with the Ae. communis group, on the basis of structural and ecological characteristics. In Eastern Kazakhstan, larvae were found at 1950 m above sea level in heavily shaded bodies of water in forests and to a lesser extent in more open bodies of water. The population density was 3-8 larvae per m<sup>2</sup> of water surface. Pupation occurred during the last week in June.

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USSR

UDC 616.89-009.836-08

TUPITSIN, Yu. Ya.

"The Treatment of Psychogenic Sleep Disorders"

Moskva, Zhurnal Nevropatologii i Psikhatrii, Vol 73, No 5, 1973, pp 742-746

Abstract: A detailed investigation of the particular features of clinical forms of pathogenic sleep disorders and study of the basic components of their pathogenesis, conducted by the author on 140 patients with neuroses, serve as a basis for development of the general principles and methods of treatment. In all cases complex treatment was employed, in which psychotherapy was combined with pharmacotherapy and physical therapy. The entire therapeutic process is divided into three successive stages. Each stage of the treatment and its combinations, depending upon the main clinico-pathogenetic features of the sleep disorder being treated, is given in detail. Results of the treatment and of the follow-up surveys are presented. 2 tables. 6 references.

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USSR .

UDC:621.313.12:539.172.12

T  
BOL'SHOV, V. I., DUBININ, A. A., DMITRIYEV, V. M., KAPCHIGASHEV,  
S. P., KON'SHIN, V. A., MATUSEVICH, YE. S., POLIVANSKIY, V. P.,  
TUPKO, V. Ya., REGUSHEVSKIY, V. I., STAVISSKIY, Yu. Ya., and  
YUR'YEV, Yu. S.

"Physical Investigation of the Target in an Electronuclear  
Neutron Flux Generator"

Moscow, Atomnaya Energiya, Vol 28, No 5, May 70, pp 388-392

Abstract: Fluxes of thermal neutrons on the order of  $10^{17}$ - $10^{18}$   
n/cm<sup>2</sup>·sec open new possibilities for investigations in many  
areas of science and technology. There is great interest in  
the study of the possibility for increasing neutron fluxes by  
using the process of multiple neutron birth upon interaction  
of nucleons with energies in the hundreds of MeV with heavy  
nuclei. This article presents the results of experiments and  
calculations concerning the neutron-physical characteristics

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USSR

BOL'SHOV, V. I., DUBININ, A. A., DMITRIYEV, V. M., KAPCHIGASHEV, S. P., KON'SHIN, V. A., MATUSEVICH, Y. E. S., TOLIVANSKIY, V. P., TUPKO, V. Ya., REGUSHEVSKIY, V. I., STAVISSKIY, Yu. Ya., YUR'YEV, Yu. S., Moscow, Atomnaya Energiya, Vol 28, No 5, May '70, pp 383-392

of the target in an electronuclear device for the generation of neutron fluxes. The yield of neutrons and distribution of the number of reactions in a heavy target and moderator are measured. The space-energy distribution of neutron flux in the moderator is calculated and the accumulation of transuranium elements in a system with high neutron flux is computed.

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USSR

UDC: 621.396.967.004

1  
AVER'YANOV, V. Ya., BAYRASHEVSKIY, A. M., GEORGIYANOV, K. V., TUPYSEV, A. N.,  
YUKHOV, I. V.

"Marine Radar Stations and Their Use (Handbook). Vol. 3"

Sudovyye radiolokatsionnyye stantsii i ikh primeneniye. (Spravochnoye rukovodstvo). T. 3 (cf. English above), Leningrad, "Sudostroyeniye", 1970, 265 pp, ill. 1 r. 1 k. (from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1G 73 K)

[No abstract]

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Acc. Nr:

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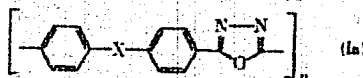
Abstracting Service:

CHEMICAL ABST. 5-7c

Ref. Code:

4R0460

101310t Effect of structural phenomena on the electrophysical properties of oxadiazole polymers. Korshak, V. V.; Mamedov, V. M.; Golubkov, G. E.; Tur, D. B. (Inst. Elementorg. Soedin., Moscow, USSR). *Vysokomol. Soedin., Ser. B* 1970, 12(1), 57-9 (Russ). The dielec. permeability, dielec. loss factor ( $\tan \delta$ ), and elec. cond. ( $\rho_v$ ) of Ia (X = O) (I) and Ia (X = phthalidyldene) (II) were detd. at  $0.5 \times 10^2$ - $0.5 \times 10^4$  Hz and -100 to



+400°. I and II were prepd. by polycyclization in polyphosphoric acid and cast on a glass support to form films 50  $\mu$  thick. A plot of  $\tan \delta$  vs. temp. showed that a substitution of an ether bond for a phthalidyldene group brought about a significant increase in the max. of  $\tan \delta$ , (due to a relaxation of the polar groups) and a slight decrease in activation energy. A plot of  $\rho_v$  vs. temp. for I had an inflection, suggesting that a transition into another state had occurred. Heat treatment of I or II in vacuo at 250° failed to affect the dependence of  $\rho_v$  on temp.

CKJR

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USSR

UDC 51:330.115

KNOPOV, P. S., TUR, L. P.

"One Problem of Control of Reserves"

Mat. Metody Issled. i Optimiz. Sistem. Vyp. 3 [Mathematical Methods of Investigation and Optimization of Systems, No 3 -- Collection of Works], Kiev, 1970, pp 21-33, (Translated from Referativnyy Zhurnal, Kibernetika, No 6, 1971, Abstract No 6 V553 from the Article).

Translation: The problem is studied of supply a consumer with a certain material, the reserve of which is distributed between two hoppers of volume  $Q$  and  $q$  respectively. The process of expenditure and refilling of reserves  $Q + q$  occurs as follows: first the current reserve  $Q$  is fully exhausted. At this moment an order is transmitted for delivery of  $Q + q$  units of material. Filling of the order requires a certain random time  $\mu$ . During this period of time, the demands are satisfied using the emergency reserve  $q$ . The distributions of time required to exhaust reserve  $Q$ , time required to exhaust reserve  $q$ , and delay time in filling orders are known.

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TURAKHANOY, K. A.

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The 10-hertz component of the joint angle tremor is shown to result from the functioning of the slowest search mechanism and the low-frequency component is a consequence of random extraneous influences on the operation of this mechanism.

Translation (of author's abstract): Results of an experimental study of the activity of a pair of musculo-articular systems in the maintenance of a given joint angle under different conditions are given.

Isakovskiy Professor Upravleniya Vysheymoy Akademiyey, Moscow, "Nauch"

Publishing House, 1970, pp 66-73

"Relationship Between Joint Tremor and Control of Joint Angle"

ANDREYEV, Ye. A., CHERNOMOR, N. A., and CHERNOMOR, V. I.

UDC 62-50

1/1

SO: Fizika Press Digest

30 Jul 71

It is shown that the signal recorded from the muscle EMG by passing it through a detector, through an inertial link with a time constant of 0.25 sec, and with a time lag of 0.02 sec is found to show quite good agreement with the variation in muscle strength in the frequency range from flexions of 2 hertz to 20 hertz.

Translation (of author's abstract): Results of experiments on animals and man studying the relationship between total electrical activity of a muscle and its strengthening in the isometric case are described.

Isakovskiy Professor Upravleniya Vysheymoy Akademiyey, Moscow, "Nauch"

Publishing House, 1970, pp 62-65

"Relationship Between Electrical Activity of Muscles and Muscle Strengthening in Isometric Conditions"

ZAKHAROVA, L. H. and SIEMENY, V. I.

UDC 62-50

91

PTD CYBERNETICS

02816

30 Jul 71

1/2 015 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--RESPIRATION, PHOSPHORYLATION, AND STRUCTURE OF RAT LIVER  
MITOCHONDRIA DURING THYROXINE ACTION IN VIVO AND IN VITRO -U-  
AUTHOR-(04)-TURAKULOV, YA.KH., MIRAKHMEDOV, A.K., LYOVICH, N.A.,  
KHUSAINOVA, F.  
COUNTRY OF INFO--USSR  
SOURCE--BIOKHIMIYA 1970, 35(2), 349-55  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--MITOCHONDRION, LIVER FUNCTION, PHOSPHORYLATION, THYROXINE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3007/0279 STEP NO--UR/0218/70/035/002/0349/0355  
CIRC ACCESSION NO--AP0135775  
UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0135775

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE RATE OF SUCCINATE OXIDN. BY RAT LIVER MITOCHONDRIA INCREASED WITH INCREASING DOSES OF THYROXINE GIVEN TO THE RAT. LIVER MITOCHONDRIA FROM THYROIDECTOMIZED RATS OXIDIZED SUCCINATE AT 83PERCENT OF THE CONTROL RATE. THESE MITOCHONDRIA IN VITRO WERE WEAKLY STIMULATED BY THYROXINE. LIVER MITOCHONDRIA FROM HYPERTHYROID RATS IN CONTACT WITH THYROXINE IN VITRO RESPIRED MORE RAPIDLY THAN DID CONTROLS, AND UNDERWENT PARTIAL UNCOUPLING, OF PHOSPHORYLATION. LIVER MITOCHONDRIA OF RATS WHICH HAD RECEIVED TOXIC DOSES OF THYROXINE WERE NOT AFFECTED BY THYROXINE OF ADP IN VITRO.

FACILITY: INST. BIOCHEM., TASHKENT, USSR.

UNCLASSIFIED

Pharmacology and Toxicology

USSR

UDC 577.1:615.7/9

TURAKULOV, Ya. Kh., NAZYROVA, V. Ye., BASHIROVA, N. S.

"Effect of Heliothrin on the Adenosine Phosphoric Acid Composition in the Liver of Animals"

Dokl. AN UzSSR (Reports of the Uzbek SSR Academy of Sciences), 1972, No 10, pp 38-39 (from RZh-Biologicheskaya Khimiya, No 7, 1973, Abstract No 7F2131)

Translation: On the 25th day after poisoning male rats with heliothrin, the concentration of the adenosine triphosphoric acid, adenosine diphosphoric acid and adenosine monophosphoric acid in the liver was  $1.66 \pm 0.06$ ,  $0.97 \pm 0.04$  and  $0.39 \pm 0.01$   $\mu$ M adenine per gram of liver tissue respectively instead of  $2.17 \pm 0.09$ ,  $1.28 \pm 0.05$  and  $0.46 \pm 0.03$  for the healthy animals. Thus, the absolute content of adenosine diphosphoric and adenosine monophosphoric acid was reduced by 23.6, 24.3 and 15.2% respectively after poisoning, but their percentage ratio (54.9:32.1:12.9) did not change in practice. It is proposed that an adenosine triphosphoric acid deficit in the liver of animals can lead to inhibition of the aliphatic acid oxidation process in the activation stage.

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USSR

UDC 577.11

TURAKULOV, Ya. Kh., SOROKIN, V. M., and NISHANKHODZHAYEVA, S. A., Institute of Biochemistry, Academy of Sciences, Uzbek SSR, Tashkent

"Amino Acid Composition of Central Asia Cobra Venom"

Moscow, Biokhimiya, No 1, 1972, pp 124-126

Abstract: Two toxins were isolated from the Central Asian cobra *Naja oxiana* E, each with a molecular weight of about 6500 to 7000. Toxin I contained a total of 11 acid and 9 basic amino acids, while toxin II contained 15 and 12, respectively. Despite the predominance of acid amino acids, both toxins exhibited the properties of alkaline protein. The absorption spectra in the UV region revealed the peak absorption of toxins I and II to be at 279 and 281 mμ, respectively. Neither toxin contained methionine or phenyl alanine. The amino acid composition of the toxins under study is compared with that of toxins obtained by other investigators from two other cobra species, *Naja nigricollis* and *Naja n. atra*.

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USSR

UDC 591.145.2

TURAKULOV, YA. KH., SOROKIN, V. M., NISHANKHODZHAYEVA, S. A., and YUKEL'SON, E. YA., Institute of Biochemistry, Academy of Sciences Uzbek SSR, Tashkent

"Toxins in the Venom of the Central Asian Cobra"

Moscow, Biokhimiya, Vol 36, Vyp 6, Nov/Dec 71, pp 1282-1287

Abstract: Two toxic agents, tentatively called toxin I and toxin II, were isolated from cobra venom by means of filtration through Sephadex G-75 and chromatography on CM-cellulose. Their homogeneity was established by electrophoresis in starch and polyacrylamide gels, and their molecular weight estimated at 6000-6500. Intraperitoneal and intravenous injections of the compounds into mice revealed that the LD<sub>50</sub> of toxin I is 0.56 and its LD<sub>100</sub> 0.85 mg/kg body weight, while the LD<sub>50</sub> of toxin II is 0.13 and its LD<sub>100</sub> 0.17 mg/kg. All nonsurvivors die within 1 hr after injection. The highest non-lethal doses for mice are 0.45 mg of toxin I and 0.07 mg of toxin II per kg body weight. Toxin II is not only more poisonous, but its concentration in the venom is four times that of toxin I. Absorption spectra of the toxins are presented.

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USSR

UDC 616.5-057-084.001.5

DOLGOV, A. P., STUDNITSIN, A. A., and TURANOV, N. M., Moscow

"Current State of Scientific Research for the Control of Occupational Dermatoses"

Moscow, Vestnik Dermatologii i Venerologii, No 8, 1971, pp 3-6

Abstract: In the Soviet Union, as well as in highly industrialized countries in the West, occupational dermatoses represent 50-70% of occupational diseases. This rise in the frequency of toxicoses is due to the expanding manufacture of polymer plastics, resins, agricultural chemicals, and their numerous intermediate products. Though considerable progress has been made in the analysis and treatment of dermatoses by institutes of labor safety and hygiene, institutes of venereal diseases, and offices of occupational dermatoses, much remains to be done in that area. Offices of occupational dermatoses should be established in all industrial districts. Workers in chemical plants should be examined before employment and regularly thereafter. Chemical substances should be classified into those causing direct skin irritations and those causing sensitization. In each case, the exact mechanism of action should be elucidated, and the best equipment should be made available for this research. Methods and means of individual protection should be developed to

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USSR .

DOLGOV, A. P., et al., Vestnik Dermatologii i Venerologii, No 8, 1971,  
pp 3-6

prevent contact with the irritating agent and to neutralize it after contact. These means will include special garments as well as thick ointments to be applied to the skin prior to work. Criteria should be worked out to introduce a uniform evaluation of work capability or incapability of patients suffering from dermatoses.

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1/2 030  
TITLE--INDICES OF THE QUALITY OF MEDICAL SERVICE TO PATIENTS WITH DERMATIC  
AND VENEREAL DISEASE -U-  
AUTHOR--(02)-TURANOV, N.N., UMNOVA, I.I.  
COUNTRY OF INFO--USSR  
SOURCE--VESTNIK DERMATOLOGII I VENEROLOGII, 1970, NR 3, PP 62-67  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--SKIN DISEASE, VENEREAL DISEASE, STATISTICS, MEDICAL  
EXAMINATION, OBSTETRICS, GYNECOLOGY, PUBLIC HEALTH  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1985/1476  
CIRC ACCESSION NO--AP0101562  
UNCLASSIFIED

2/2 030

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0101562

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A PROJECT OF STATISTICAL INDICES FOR EVALUATION OF THE QUALITY OF MEDICAL SERVICE TO PATIENTS WITH DERMATIC AND VENEREAL DISEASES IS PRESENTED: (1) GROUNDS FOR OUT PATIENT AND HOSPITAL SERVICE FOR PATIENTS REQUIRING DERMATO VENEREOLOGICAL INSTITUTIONS IN CONTROL OF DERMATIC AND VENEREAL DISEASES; (2) CHARACTERISTICS OF THE EFFECTIVENESS OF PROPHYLACTIC EXAMINATIONS FOR DETECTION OF PATIENTS WITH VENEREAL AND DERMATIC DISEASES; (3) INDICES OF THE QUALITY OF MEDICAL SERVICE FOR PATIENTS WITH VENEREAL DISEASES FOR OBSTETRIC GYNECOLOGICAL INSTITUTIONS, THERAPEUTIC AND NEUROLOGICAL HOSPITALS; (4) INDICES CHARACTERIZING THE ACTIVITY OF LABORATORY SERVICE IN THE DIAGNOSIS OF DERMATIC AND VENEREAL DISEASES.

UNCLASSIFIED

USSR

TURANOV, Ye. N.

UDC: 536.24:532.526

"Heat Transfer of a Concave Surface in a Supersonic Flow"

Tr. II Resp. konf. po aerogidromekh., teploobmenu i massoobmenu. Sekts. "Aerodinamika bol'sh. skorostey" (Works of the Second Republic Conference on Aerohydromechanics, Heat Exchange and Mass Exchange. "High-Velocity Aerodynamics" Section), Kiev, Kiev University, 1971, pp 168-172 (from RZh-Mekhanika, No 5, May 72, Abstract No 5B998)

Translation: An investigation was made of heat exchange on the concave head surface of axisymmetric bodies at Mach numbers  $M=2.5$ ,  $3.0$  and  $3.5$ . The concave surface had a spherical shape with a depth varying from  $0$  to  $R$  ( $R$  is the radius of the middle cross section of the body). The shock wave in front of the body pulsed with a frequency of the order of  $1$  kHz. Heat exchange on the axis of symmetry of the concave surface was of the same order as heat exchange on a flat face. Tests were also done on models with holes through the concave surface. Pulsations stopped with holes having a relative area of  $6-10\%$ . In this connection, the heat flux at the critical point was lower than at the critical point of a flat face and varied in ap-

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USSR

TURANOV, Ye. N., Tr. II Resp. konf. po aerogidromekkh., teploobmenu i mas-soobmenu. Sekts. "Aerodinamika bol'sh. skorostey", Kiev, Kiev University, 1971, pp 168-172

proximate conformity with a linear law as a function of the depth of the cavity. V. Ya. Borovoy.

2/2

- 9 -

TURANOV, Ye. N.

And 1 / R 960 / 3000000  
Due 9/20 21

(2)

Turanov, Ye. N. Heat evolution at a concave surface in supersonic flow. IN: Trudy II Respublikanskoy konferentsii po aerodinamike, teploobmenu i masoobmenu. Sektsiya "Aerodinamika, bol'shikh skorostey". Kiyev, Kiyevskiy universitet, 1971, 168-172. (RZhMekh, 5/72, no. 5B998)

Heat exchange on the concave frontal surfaces of axisymmetric bodies was investigated at Mach numbers  $M = 2.5, 3.0$ , and  $3.5$ . The concave surface was spherical and varied in depth from 0 to  $R$ , where  $R$  is the radius of the maximum cross section of the body. The shock wave in front of the concave body pulsed at a frequency of 1 kHz. The heat exchange on the axis of symmetry of the concave surface was on the same order as that on the surface of the flat face. Tests were also conducted on models with through apertures in the concave surface. The heat wave aperture area of 6-10%, the pulsations ceased. The heat flux at the critical point in this area was less than at the critical point of a flat face and varied approximately in accordance with a linear law as a function of cavity depth.

Pavlov, D. M. Solution to complete Navier-Stokes equations to problems on flow around blunt bodies. IN: Trudy sektsii po chislennym metodam v gazovoy dinamike 2-go Mezhdunarodnogo kollokviuma po aerodinamike vzyva i resheniyahchikh sistem, 1969. Moskva: v. 1, 1971, 55-66. (RZhMekh, 5/72, no. 5B887)

Numerical solutions to complete Navier-Stokes equations are obtained for problems of the flow and heat exchange of a viscous gas



USSR

UDC:622.243.144.2

MUKHITDINOV, K. M., TURAPOV, M. K., IZUMRUDOVA, T. V.

"New Washing Solutions for Drilling Deep Wells Under Difficult Geological Conditions"

Tashkent, Uzbekskiy Geologicheskii Zhurnal, No. 6, 1970, pp. 11-14

Abstract: Various difficulties arise in the drilling of oil and gas wells in Uzbekistan, depending on the age, lithology and structure of the deposits. Although the assortment of chemical diluting agents is rather great, a need is still felt for an agent which can meet the demands for chemical activity without excessive foam formation. The authors have produced three new types of nitrated sulfite-alcohol-wash agents, found to be superior to both untreated and condensed agents of the same type used earlier. The optimal concentration of the new agent to improve the rheological properties of the solution is 2-4 times less than that of agents used earlier, and is independent of the composition of the clay solutions and temperature. The new agent shows particular great improvement in properties under conditions of unusually high stratal pressures.

1/1

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Acc. Nr:

AP0050564

Abstracting Service:  
CHEMICAL ABST. 5770

Ref. Code:  
URC109

T

94318w Theory of reaction of ions from a single-crystal face. Parilis, E. S.; Turbay, N. Yu.; Kivilis, A. M. (USSR). *Radiolekh. Elektron.* 1970, 15, 14, 214-17 (Russ). The role of surface atom chains in the ion reflection at sliding angles of incidence was studied by modeling the process on an electronic computer. A program was written for Ar<sup>+</sup> ions ( $E_0 = 30$  keV) on the (100) face of Cu at angles from 8 to 18° in the plane (110). The space and energetic distribution of the reflected particles are given graphically. The results are understandable on the basis of trajectories oriented by the canal effect. G. Thierot

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21

USSR

UDC: 519.21

KOROLYUK, V. S.; ~~TURBIN, A. E.~~, Institute of Mathematics, Academy of Sciences of the Ukrainian SSR

"Concerning a Method of Proving Limit Theorems for Certain Functionals of Semi-Markov Processes"

Kiev, Ukrainskiy Matematicheskii Zhurnal, Vol. 24, No 2, 1972, pp 234-240

Abstract: Many characteristics of Markov chains, semi-Markov processes, Markov recovery processes, and so forth satisfy an equation of the form

$$(I - P - Q(z))f_z(z) = q(z),$$

where  $P$  is the matrix of probabilities of transformation of the imbedded Markov chain, matrix  $Q(z)$  and vector  $q(z)$  are defined by the conditions of the problem,  $f_z(z)$  is the unknown characteristic of the process  $\xi(t)$  being investigated. This paper proposes a method of proving limit theorems of the form

$$\lim_{t \rightarrow 0} v(z)/f_t(z) = \bar{f}_t(0),$$

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USSR

KOROLYUK, V. S., TURBIN, A. F., Ukr. Mat. Zh., No 2, 1972,  
pp 234-240

where  $v(z)$  is a defined normalizing function. The idea behind  
the method is that the principal part of the operator

$$(I - P - Q(z))^{-1} = P(z) + o(\|P(z)\|)$$

can be isolated when completely natural restrictions are made  
on the initial process. Bibliography of nine titles.

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USSR

TURBIN, A. F.

UDC: 519.217

"On Asymptotic Behavior of the Time That a Semi-Markov Process Remains in a Reducible Subset of States. Linear Case"

Teoriya veroyatnostey i mat. stat. Mezhd. nauch. sb. (Probability Theory and Mathematical Statistics. Interdepartmental Scientific Collection), 1971, vyp. 4, pp 179-194 (from RZh-Kibernetika, No 11, Nov 71, Abstract No 11V89)

Translation: There is a semi-Markov process  $\xi(t)$  defined on the set of states  $E = \{1, 2, \dots, n\}$  with a unique ergodic class, and possibly with some immaterial states. Further, at some sufficiently small  $\varepsilon > 0$  a semi-Markov process  $\xi_\varepsilon(t)$  is defined, the transfer characteristics of  $\xi_\varepsilon(t)$  converging to the characteristics of process  $\xi(t)$  as  $\varepsilon \rightarrow 0$ . The process  $\xi_\varepsilon(t)$  takes on values from the set  $E = \{0, 1, 2, \dots, n\}$ ; the zero state is an absorbing state. The distribution of the time that the process remains in a given state is independent of  $\varepsilon$ , while the probabilities of transition from one state to

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USSR

TURBIN, A. F., Teoriya veroyatnostev i mat. stat. Mezhd. nauch. sb.,  
1971, vyp. 4, pp 179-194

another are linearly dependent on  $\epsilon$ . In particular, when  $\epsilon > 0$ , there is a positive probability of transfer from  $E_0$  to the zero state. The author constructs an asymptotic expansion for the characteristics of the time of reaching an absorbing state. I. Kovalenko.

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USSR

UDC 519.217

KOROLYUK, V. S., ~~TURBIN, A. F.~~

"Asymptotic Behavior of the Time Which a Semimarkov Process Spends in a Reducible Set of States"

Teoriya Veroyatnostey i Mat. Statist. Mezhd. Nauchn. Sb. [Theory of Probabilities and Mathematical Statistics, Interdepartmental Scientific Collection], No 2, 1970, pp 133-143 (Translated from Referativnyy Zhurnal Kibernetika, No 3, 1971, Abstract No 3 V37 by the authors).

Translation: An algorithm for construction of asymptotic expansions for the generating function of the time spent by a Semimarkov Process (SMP) in a fixed subset of states, suggested by V. S. Korolyuk (RZhMat, 1970, 7 V50), is extended to the case of SMP with nonreturning states.

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USSR

UDC: 519.2

TURBIN, A. F.

"Application of the Theory of Perturbation of Linear Operators to Solution of Some Problems Involving Markov Chains and Semi-Markov Processes"

Teoriya veroyatnostey i mat. stat. Mezhd. nauch. sb. (Probability Theory and Mathematical Statistics. Interdepartmental Scientific Collection), 1972, vyp. 6, pp 118-128 (from RZh-Kibernetika, No 8, Aug 72, Abstract No 8V65)

Translation: The paper proposes an approach to solution of asymptotic problems in the theory of Markov chains and semi-Markov processes involving direct expansion of operators of the form  $(I - P + Q(z))^{-1}$  in a series in powers of  $z$  assuming that such operators exist and are bounded. Here  $P$  is the operator of probabilities of transition of some Markov chain which may have both reciprocal and nonreciprocal states, and  $Q(z)$  is a linear operator from  $[X \rightarrow X]$  which is analytically dependent

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USSR

TURBIN, A. F., Teoriya veroyatnostey i mat. stat. Mezhd.  
nauch. sb., 1972, vyp. 6, pp 118-128

on  $z$  and is such that  $\|Q(z)\| \rightarrow 0$  when  $z \rightarrow 0$ , where  $X$  is a space of functions defined on the phase space of the process to be investigated. Author's abstract.

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- 3 -

USSR

UDC 577.391+575.1+633.15+575.1

~~TURBIN, N. V.~~, VOLODIN, V. G., and GORDEY, I. A.

"The Reasons for Increased Radioresistance of Heterosis Forms of Plants"

Minsk, Voprosy Genetiki i Selekcii (Aspects of Genetics and Selection),  
"Nauka i Tekhnika," Minsk, 1970, p 302

Abstract: Experimental data analyzing the dependence of the radioresistance level of plants on the degree of their heterozygosity are presented. On the basis of an analysis of radiation induced depression of 12 quantitative criteria of 35 inbred strains of maize plants with different duration of self-pollination and of different origin, it is indicated that the degree of heterozygosity plans an essential part in the radioresistance of plants, although no direct correlation between these criteria has been discovered.

The problem as to whether the balancing of the heterozygosity of the heterosis forms, developing as a result of crossing of pairs with high combining ability and the creation of conditions for the intensification of metabolic and reducing processes is one of the reasons for the increase in plant radioresistance, is discussed.

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USSR

UDC 577.391:576.8

TROITSKIY, Nikolay Aleksandrovich, TURBIN, Nikolay Vasil'yevich, and  
 ARSEN'YEVA, Militsa Al'fredovna; Institute of Genetics and Cytology,  
 Academy of Sciences, Belorussian SSR

Geneticheskiye Effekty Promezhutochnykh neytronov (Genetic Effects of  
 Intermediate Neutrons), Minsk, "Nauka i Tekhnika," 1971

Translation: Annotation: The book presents data on the genetic effectiveness  
 of neutrons with an average energy of 200 keV, as compared with the effect of  
 gamma rays and fast neutrons. For the first time in the Soviet literature,  
 the question of the biological effect of elastic nuclear collisions is  
 examined and the corresponding experimental data are given. The relationship  
 between the genetic effectiveness of neutrons and biophysical parameters of  
 irradiation, and, in particular, linear energy losses, are discussed. The  
 book is intended for specialists in the field of radiation biology and  
 genetics. 23 tables, 56 figures, 307 references, 168 pp.

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TROITSKIY, Nikolay Aleksandrovich, et al., Geneticheskiye Effekty Promezhu-  
tochaykh neytronov, Minsk, "Nauka i Tekhnika," 1971

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USSR

TROITSKIY, Nikolay Aleksandrovich, et al., Geneticheskiye Effekty Promezhu-  
tochnykh neytronov, Minsk, "Nauka i Tekhnika," 1971

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USSR

UDC 669.24.669.017.3.548.5

ZUBEKHIN, V. P., and TURBIN, V. S., Voronezh

"Rate of Nickel Whisker Growth"

Moscow, Izvestiya Akademii Nauk SSSR, No 1, Jan/Feb 74, pp 62-63

Abstract: The kinetics of nickel crystal whisker growth in the different stages is examined and a method proposed for increasing the rate of growth. The whisker growth mechanism occurs in three stages: 1) nucleation, where water vapors from the  $\text{NiBr}_2$  or  $\text{NiCl}_2$  are present; 2) water vapors are dissipated and conditions are favorable for growth; and 3) growth becomes radial and not lengthening. The first stage is slow, the second stage is the fastest, and the third stage slows in length growth rate as the whiskers become fatter. A high-voltage discharge from a high-voltage induction coil (for hydrogen ionization) made it possible to increase whisker growth rate. For instance, under ordinary conditions the whiskers grew about 8 mm in six hours while, using the induction coil to produce more hydrogen, this value was about 14 mm in six hours. One figure, seven bibliographic references.

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1/2 025 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--ENHANCING NEUTRON GENETIC EFFICIENCY BY INFRARED IRRADIATION -U-  
AUTHOR--TURBINA, L.N.  
COUNTRY OF INFO--USSR  
SOURCE--DOKL. AKAD. NAUK BSSR; 14: 65-7 (JAN 1970).  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--NEUTRON RADIATION, IR RADIATION BIOLOGIC EFFECT, RADIATION  
GENETIC BIOLOGIC EFFECT, RADIATION INDUCED MUTATION, ESCHERICHIA COLI,  
CHROMOSOME  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1997/1102 STEP NO--UR/0250/70/014/000/0065/0067  
CIRC ACCESSION NO--AT0119961

UNCLASSIFIED

2/2 025

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AT0119961

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EFFECTS OF INFRARED IRRADIATION ON NEUTRON INDUCED GENETIC MODIFICATIONS WERE STUDIED USING E. COLI EXPOSED TO NEUTRONS WITH 0.2 0.4 MEV ENERGIES. TESTS MADE WITH PREPARATIONS OF THE DONOR (HFR-C) IRRADIATED WITH INFRARED LIGHT BEFORE AND AFTER THE EXPOSURE TO 0.2 MEV FAST NEUTRONS FOR 1.5 HR SHOWED INCREASED RECOMBINATION. THE DATA CONFIRMED THE POSTULATION THAT INFRARED LIGHT ENHANCED THE NEUTRON INDUCED DAMAGE IN HFR-C CHROMOSOMES; THIS AIDS RECOMBINATION IN THE RECIPIENT CELL. FACILITY: INST. OF GENETICS AND CYTOLOGY, MINSK.



USSR

UDC 575.24:612.014.44

~~THIRYNA, I. N.~~, Institute of Genetics and Cytology, Academy of Sciences Belorussian SSR

"Strengthening the Genetic Effectiveness of Neutrons with Infrared Irradiation"

Minsk, Doklady Akademiyi Nauk BSSR, Vol 14, No 1, 1970, pp 65-67

Abstract: *Escherichia coli*, was irradiated with infrared alone, with neutron bombardment alone, or with infrared before and after neutron bombardment. It was found that irradiation with infrared before and after neutron bombardment increases the number of recombinations of the injured chromosomes in the recipient cell, as compared with controls.

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USSR

UDC: 8.74

TURBOVICH, I. T., GITIS, V. G., MASLOV, V. K.

"Pattern Recognition. A Deterministic-Statistical Approach"

Opoznavaniye obrazov. Determinirovannno-statisticheskiiy podkhod (cf. English above), Moscow, "Nauka", 1971, 248 pp, ill. 1 r. (from RZh-Kibernetika, No 1, Jan 72, Abstract No 1V1071)

Translation: The authors consider theoretical aspects and algorithms for design of recognition automata, and also examples of solving practical problems based on the deterministic-statistical approach developed in this book.

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TURCHAK, L.I.

RND / 18.11.60 / 5-MK-73  
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around various bodies (a sphere, a right circular cylinder, an ellipsoid, a hyperboloid of revolution, and a blunt cone) for Reynolds numbers  $R \leq 10^3$  and Mach numbers  $2 \leq M_\infty \leq 15$ . Calculation results revealed a weak upstream transmission of the perturbation; this permitted calculation of the flow field on the windward side of the body in the stream independently of the flow on the lee side. The solutions are sought using an explicit difference scheme by the method of adjustments. The density, pressure, and heat flow characteristics, the resistance coefficient, and the position of the shock wave and of the sonic line are listed for various values of  $R$  and  $M$ . Good agreement with experimental data for  $R > 10$  is indicated.

Stulov, V. P., G. F. Telenin, and L. I. Turchak.  
Supersonic flow around blunt bodies by various gas mixtures with high speed chemical reactions. IN: Trudy sektsii po chislennym metodam v gazovoy dinamike 2-go Meshdunarodnogo kollokviuma po gazodinamike varyaia reaktivnyushchik sistem. 1969. Moskva, v. 3, 1971, 3-28. (Izvestiya, 3/72, no. 5B1114)

A numerical method is proposed for the calculation of flow near the frontal part of axisymmetric blunt bodies in various gas mixtures, undergoing nonequilibrium chemical processes. Underlying the method is the notion that the total system of the equations of relaxation gas dynamics is divided into two systems, one of which (the equations of motion) is solved by the conventional method, while an implicit difference scheme along the streamline is used for solving the relaxation equations. The problem is solved by iteration between the systems at each calculated layer. The proposed method makes it possible to investigate flow with an arbitrary degree of unevenness. The calculations assume that the hypersonic flow around the body.

1/2 055

UNCLASSIFIED

PROCESSING DATE--23OCT70

TITLE--SUPERSONIC NONEQUILIBRIUM FLOW OF A MIXTURE SIMULATING THE VENUSIAN  
ATMOSPHERE PAST SEGMENTAL BODIES -U-

AUTHOR--TURCHAK, L.I.

COUNTRY OF INFO--USSR

SOURCE--AKADEMIIA NAUK SSSR, IZVESTIIA, MEKHANIKA ZHIDKOSTI I GAZA,  
MAR-APR 1970, P. 67-72

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS, ASTRONOMY, ASTROPHYSICS

TOPIC TAGS--ENVIRONMENT SIMULATION, VENUS PLANET, PLANETARY ATMOSPHERE,  
SUPERSONIC FLOW, NONEQUILIBRIUM FLOW, SHOCK WAVE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--2000/1504

STEP NO--UR/0421/70/000/000/0067/0072

CIRC ACCESSION NO--AP0125132

UNCLASSIFIED

2/2 055

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0125132

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CALCULATION OF THE FLOW OF A MIXTURE COMPOSED OF 94PERCENT CARBON DIOXIDE, 5PERCENT MOLECULAR NITROGEN, AND 1PERCENT ARGON, PAST THE NOSE AREAS OF SEGMENTAL BODIES. THE VARIATIONS IN THE TEMPERATURE, PRESSURE, AND CONCENTRATION DISTRIBUTIONS IS DETERMINED AS A FUNCTION OF THE PRESSURE IN FRONT OF THE SHOCK WAVE AND THE VELOCITY OF THE BODY. AN ANALYSIS OF THE CONCENTRATION DISTRIBUTION LEADS TO A SIMPLIFIED MODEL OF THE KINETICS OF THE CHEMICAL REACTIONS IN THE SHOCK LAYER, WHICH REFLECTS THE PRINCIPAL RELATIONSHIPS OF THE FLOW AND MAKES IT POSSIBLE TO STUDY THE CHARACTERISTICS OF THE GASDYNAMIC PARAMETER FIELDS ASSOCIATED WITH NONEQUILIBRIUM CHEMICAL REACTIONS. FACILITY: MOSKOVSKII GOSUDARSTVENNYI UNIVERSITET, MOSCOW, USSR.

UNCLASSIFIED

1/2 022 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--CONFORMITY BETWEEN THE CALCULATED AND RECORDED NUMBER OF PRIMARY  
INFECTIOUS DISEASES IN CHILDREN'S COLLECTIVE BODIES -U-  
AUTHOR-(03)-LEVI, M.I., TURCHANINA, N.A., ZAYDNER, G.B.  
COUNTRY OF INFO--USSR  
SOURCE--ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOLOGII, 1970, NR 6,  
PP 90-95  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--PEDIATRICS, INFECTIOUS DISEASE, MATHEMATIC ANALYSIS, POISSON  
EQUATION  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3001/0416 STEP NO--UR/0016/70/000/006/0090/0095  
CIRC ACCESSION NO--AP0126169  
UNCLASSIFIED

2/2 022

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0126169

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A METHOD OF DETERMINATION OF THE NUMBER OF PRIMARY (BROUGHT IN) PATIENTS SUFFERING FROM INFECTIOUS DISEASES IN CHILDREN'S COLLECTIVE BODIES BY COMPARING THE NUMBER OF GROUPS FREE OF INFECTIONS WITH THE NUMBER OF ALL THE GROUPS WAS USED. THIS METHOD WAS SHOWN TO CORRELATE WELL WITH THE RECORDED NUMBER OF PATIENTS. THIS POINTED OUT THAT THE SUPPOSITION THAT DISTRIBUTION OF PRIMARY PATIENTS IN COLLECTIVE BODIES CORRESPONDED TO POISSON'S DISTRIBUTION WAS CORRECT. THE NUMBER OF PRIMARY PATIENTS FAILED TO DEPEND DIRECTLY EITHER UPON THE CHARACTER OF THE INFECTION OR THE NUMBER OF DISEASES, BUT DEPENDED ON THE NUMBER OF COLLECTIVE BODIES FREE OF INFECTIONS, AND ON THE TOTAL NUMBER OF COLLECTIVE BODIES.  
FACILITY: MOSKOVSKAYA GORODSKAYA DEZINFEKSIONNAYA STANTSIYA I  
SANITARNO-EPIDEMIOLOGICHESKAYA STANTSIYA KIYEVSKOGO RAYONA MOSKVY.

UNCLASSIFIED

Acc. Nr: **AP0037013**

Ref. Code: UR 0239

PRIMARY SOURCE: Fiziologicheskiiy Zhurnal SSSR, 1970, Vol 56,  
Nr 2, pp 238-243

COMPLEX INVESTIGATION INTO MINUTE VOLUNTARY  
HYPERVENTILATION EFFECT

Fantalova, V. L.; Turchaninova, O. Ye.

From the N. N. Burdenko Institute of Neurosurgery, USSR  
Ac. Med. Sci. Moscow

The influence of voluntary minute hyperventilation (H. V.) on breathing rhythmicity, finger plethysmogram and EEG (all simultaneously registered) has been investigated in 25 healthy adult subjects.

In eleven cases in parallel tests the pH change has been measured, which proved to be 0.07-0.18.

It was established that as a rule the effect of minute H. V. persists several minutes after its stopping.

Nearly all subjects displayed repeated expiratory pauses of variable duration, although immediately after H. V. not apnea, but a brief hyperpnea with an increase in the

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19721946

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amplitude of respiration was more frequent. In rare cases hyperpnea was constant, and only in one of them the rhythmicity of breathing remained quite undisturbed in its regularity.

In EEG, after initial depression of alpha-activity as an answer to the command and beginning of the movement, its visible intensification appeared as well as more expressed spreading over the hemisphere — cortex — in answer to the developing hypocapnia.

The phenomenon of hypersynchronisation of alpha-rhythm maintained some time after H. V. In the next stage in many subjects a correlation was found between expiratory pauses and periods of depression of alpha-activity in EEG.

This fact compared with other original and literary findings is discussed assuming the possible role of brainstem reticular formation in creation of the CNS reaction to H. V.

It is accentuated that drowsing causes more expressed apnea and repeated expiratory pauses in the posthyperventilation period.

Increase in peripheric blood-filling observed during H. V. confirms literary findings which point to vasodilatation as an answer to hypocapnia.

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19721947

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The development of vasomotor reaction in posthyperventilation period is variable. In stage-by-stage comparison of blood-filling fluctuations with changes in breathing rhythm and EEG no clear correlations were found.

In control experiments on the same group of persons the reaction of breathing, EEG and plethysmogram to rhythmic voluntary movements of the arm and fingers has been studied (amascular loading); these did not cause functional changes which were typical for H. V.

Similar moment was only the first-orienting-like reaction recorded in plethysmographic and EEG.

A detailed analysis of complex functional changes in H. V. reaction in persons with roughly different types of respiratory answer is the object of the following paper.

32.

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19721948

TURCHANINOVA, V. F.

SPRS 56.459  
14 JULY 72

110

CHARACTERISTICS OF THE METHOD FOR REGISTERING THE INDICES  
OF PHYSIOLOGIC FUNCTIONS ON THE "SOYUZ-9" SPACESHIP

Article by V. A. Belavskiy, A. G. Serpukhin, I. V. Serov and  
V. F. Turchaninova. Moscow, Akademiya Voprosy Kosmicheskoy  
Biologii i Meditsiny (Current Problems in Space Biology and Med-  
icine), Russian, 1971, pp 265-267

The great duration of flight by the "Soyuz-9" spaceship  
made it particularly important to prevent changes of the skin  
under the ECG electrodes.

Physiologic information aboard the "Soyuz-9" spaceship  
was registered using the same medical monitoring apparatus  
as during previous flights of the "Soyuz" ships. A number  
of improvements were introduced into the system of physi-  
ologic sensors and the method for its use due to the consid-  
erable lengthening of flight duration.

During the flight we registered the electrocardiogram  
(ECG) in the "DS" lead, splanchnicogram (SG), manogram  
(PG) and pulse rate of each of the crew members. All the phys-  
iologic sensors and electrodes were attached to the bodies of  
the cosmonauts by elastic fabric straps.

The most important of the improvements in the method for  
using the physiologic sensors were:

1) the cosmonauts themselves put on and took off the ap-  
paratus of physiologic sensors; 2) every day, in cases of continuous  
wearing of the ECG electrodes, they were moved to other parts of  
the skin in such a way that on each of the skin sectors designat-  
ed for this purpose the electrode was present for one day and  
the skin was free of it for three days. The cosmonaut himself  
processes the skin with a dehydrating fluid, applies the electrode.

Turchaninova, V. F.

PR5 56 499  
14 JULY 72

104

RELIABILITY OF ARTERIAL PRESSURE MEASUREMENTS MADE BY  
PERSONS NOT HAVING A MEDICAL EDUCATION

Article by V. F. Turchaninova and "G. Chernykh, Moscow,  
Akademiya Voennoy Aviacii i Kosmonavtiki, Moscow,  
USSR. Problems in Space Biology and Medicine, Moscow, 1972,  
pp 259-260.

Investigations were made for the purpose of developing  
a method for teaching the measurement of arterial pressure  
(AP) to individuals not having a medical education and for  
evaluating the reliability of the data which they collect.

Seven males in the age group from 25 to 35 years were  
taught to measure AP by the Korotkov method. Teaching involved  
of familiarization of the trainees with the earlier formulated  
instructions on measuring AP and conducting three exercises  
with them. During the exercises, each of which lasted not  
more than 30-40 minutes, the physician in the presence of the  
subjects measured arterial pressure with a sphygmomanometer,  
pointing out to the subjects the correct application of the  
cuff, determining the site for placement, and the use of the  
phonendoscope. Particular attention was given to the time  
for determining pressure: it was recommended that the appear-  
ance of sounds at the time of decompression be regarded as  
the maximum AP and that the disappearance of sound be regard-  
ed as minimum AP.

An evaluation of the accuracy of AP measurement by the  
trainees was made during the 20-30 days following training,  
during which the subjects each day in the morning and evening  
independently measured the AP. The measurement was made al-  
ternately on both arms three times at two-minute intervals.  
In addition to the trainees, pressure was determined by a phys-  
ician and nurse. For these purposes we designed a special  
phonendoscope, making it possible to listen to the Korotkov  
tones by three persons simultaneously. In addition, for

USSR

(78)

BALOSHIN, O. N., BLAGORODOV, A. M., BOLONKIN, B. V., VLADIMIRSKIY, V. V.,  
GORIN, YU. P., GRIGOR'YEV, V. K., GRISHIN, A. P., YEROFEYEV, I. A., KOROL'KOV,  
I. YA., LUZIN, V. N., MILLER, V. V., NIKOLAYEVSKIY, YE. S., PETRUKHIN, V. N.,  
PLIGIN, YU. S., PONOMAREV, L. A., SIROTKIN, S. M., SOKOLOVSKIY, V. V., TARASOV,  
YE. K., TIKHOMIROV, G. D., TROSTINA, K. A., TURCHANOVICH, L. K., and SHKURENKO,  
YU. P., Institute of Theoretical and Experimental Physics GKI AE (State  
Committee for the Use of Atomic Energy)

"The  $K^-p \rightarrow \bar{K}^0 n$  Charge Exchange Reaction at a Pulse of 39 GeV/sec"

Moscow, Yadernaya Fizika, Vol 18, No 3, Sep 73, pp 542-544

Abstract: The authors present the measurement results from studying the charge exchange reaction of  $K^-$ -mesons on protons ( $K^-p \rightarrow \bar{K}^0 n$ ) at a pulse of 39 GeV/sec. The study was carried out using the ITEP 6-m magnetic track spectrometer. The working volume of the magnetic field of the spectrometer was  $1.0 \times 1.5 \times 6$  m. Twelve optical spark chambers were located inside the magnet, with each chamber having eight spark gaps (10 mm each). The chamber electrodes consisted of two layers of aluminum foil 14 microns thick. The photographs were taken through a special slit in the magnet yoke. A mirror system made it possible to obtain three stereoprojections of all of the chambers

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BALOSHIN, O. N., et al., Yadernaya Fizika, Vol 18, No 3, Sep 73, pp 542-544 with one camera. The reaction was studied on the negative particle beam of the IFVE accelerator. The  $K^-$ -mesons were distinguished by a differential Gerenkov counter. The beam was focused on a liquid hydrogen target 40 cm long which was set approximately three meters from the first chamber of the spectrometer. Approximately  $5 \cdot 10^7 K^-$ -mesons were passed through the equipment and 1020 photographs taken. Pairs of uniformly charged tracks were measured on the photographs. The measurement results were then processed on the Razdan-3 computer. Only 270 intersecting tracks were found. A graph is given for the differential cross section of the reaction. The results show that the cross section value of  $7.4 \pm 1.2$  microbarns obtained by the authors in comparison to data obtained for lower energies elsewhere shows the logarithmic dependence of the charge exchange cross section on the pulse, equal to  $-1.58 \pm 0.05$ . The authors thank K. G. Boreskov, A. M. Lapidus, S. T. Sukhorukov, and K. A. Ter-Martirosyan for their presentation of the computational results as the dependence of the differential cross section on pulse transfer ( $do/dt$ ). This dependence is compared with predictions of the Regge pole model.

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USSR

UDC: 681.325.65:621.382

NIKOLAYEV, Ye. I., GVOZDEV, S. A., TURCHENKO, I. S.

"A Pulse-Potential Diode-Transformer Rectifier"

USSR Author's Certificate No 253439, filed 7 May 65, published 25 Feb 70  
(from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 11,  
Nov 70, Abstract No 11A57 P)

Translation: This Author's Certificate introduces a pulse-potential diode-transformer rectifier with an amplifier and a resistance-capacitance circuit for delaying the potential by the time of pulse operation. To reduce interference with simultaneous arrival of the input pulse and the leading edge of the enabling potential, as well as to increase speed and improve resistance to interference in the supply circuit, additional semiconductor diodes are connected in parallel with the resistor in the potential delay circuit and between the pulse and potential inputs. The capacitor in the potential delay circuit is connected to the output of the collector supply source. One illustration. V. M.

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USSR

UDC 620.186.5

ZHIROVETSKIY, V. M., MOYSA, M. I., PLYATSKO, G. V., and  
TURCHENKO, N. P., Institute of Physics and Mechanics of  
the Academy of Sciences UkrSSR, L'vov

"Some Peculiarities of the Change in Properties of Alloys  
After Laser Beam Treatment"

Kiev, Fiziko-khimicheskaya Mekhanika Materialov, Vol 8,  
No 1, 1972, pp 84--87

Abstract: Investigation results of the effect of local pulsed heating with a laser beam on the structure and microhardness changes of different steel brands, including tool steels U8, U10, high-chromium steel Kh12M, nine other steel brands, and Armco iron, are discussed by reference to microstructures and diagrams. After cooling, the structure and physico-mechanical properties of the metal of former melted state differ substantially from its initial condition: specific needle-shaped desintegration of grains and increased microhardness resulted in all investigated cases, including Armco iron. The laser beam  
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ZHIROVETSKIY, V. M., et al., Fiziko-Khimicheskaya Mekhanika Materialov, Vol 8, No 1, 1972, pp 84-87

treated zone of tool steels U8 and U10 was found to consist of martensite, residual austenite,  $Fe_3C$  carbide, and  $Fe_2O_3$  oxide. Supposedly, the high heating rates of steels affect favorably the dissolution process of carbides. The laser-beam treatment of annealed Kh12M steel, apparently, comminutes the net of carbides effecting a local conversion of  $Fe_2W_3$  in the WC carbide and the  $W_2C$   $\beta$ -phase, developing by  $2600^{\circ}C$ , and at the same time the microhardness increases from 240 to 520 kg/mm<sup>2</sup>. The observed decrease in microhardness of the hardened Kh12M steel from 720 to 460 kg/mm<sup>2</sup> is probably due to the fact that Va, which decreases the overheating sensitivity, is bonding a part of carbon in poorly soluble VC carbides. Four illustr., seven biblio. refs.

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1/2 008

UNCLASSIFIED

PROCESSING DATE--04DEC70

TITLE--TEMPERATURE OF THE WALLS OF A FURNACE CHAMBER AND THE CURVATURE OF  
THE SURFACE OF A COKE MASS -U-

AUTHOR--TURCHENKO, P.I.

COUNTRY OF INFO--USSR

SOURCE--KOKS KHIM. 1970, (5), 25-7

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--COKE, LABORATORY FURNACE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3008/1212

STEP NO--UR/0068/70/000/005/0025/0027

CIRC ACCESSION NO--AP0138227

UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0138227

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. COKING WAS DONE IN AN ELEC. LAB. FURNACE HEATED TO 1100DEGREES IN 8 MIN. AFTER 5-6 HR THE COKE WAS COOLED WITH WATER AND THE MEAN CURVATURE RADIUS  $P$  (IN MIN) OF THE CAULIFLOWER LIKE SURFACE OF THE CAKE WAS MEASURED. SINCE THE COEFF. OF CORRELATION OF  $P$  AND THE WALL TEMP. (DEGREESC)  $T$  WAS 0.9988, THE EXPTL. DERIVED EQUATION  $T$  EQUALS  $1183-6.09 P$  WAS PROPOSED FOR EVALUATING  $T$  FROM  $P$  AND FOR DETG. THE UNIFORMITY OF TEMP. OF THE WALLS OF COM. COKING CHAMBERS.

UNCLASSIFIED

USSR

DOMBROVSKIY, G. A., TURCHENKO, V. Ya.

UDC: 539.374

"Concerning the Dilatational Wave"

Moscow, Doklady Akademii Nauk SSSR, Vol 204, No 5, Jun 72, pp 1061-1064

Abstract: The paper deals with the problem of propagation of a dilatational wave in a cylindrical (prismatic) semi-infinite elastic-plastic rod. A study is made of the asymptotic behavior of the solution at large time values and at great distances from the end of the rod.

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TURCHENKOV, I. P. LEVCHENKO, V. I.

UDC 681.325

"Display Device"

USSR Author's Certificate No 311262, filed 21 Oct 69, published 3 Nov 71  
(from RZh-Avtomatika, Telemekhanika i vychislitel'naya tekhnika, No 4, Apr 72,  
Abstract No 4A475P)

Translation: A display device is proposed which contains a unit for comparing the instantaneous values of the sawtooth voltage with a constant reference voltage, a reference pulse generator, pulse shapers for shaping pulses of different length, a flip-flop, a univibrator, comparison circuit, an inhibitor and setup (OR) circuit, a light display, and commutators. In order to insure visual display of the nature of the nonlinearity of the sawtooth pulses directly connected with the nature of the time mismatch of the comparison pulses with respect to the reference pulse, the outputs of the comparison unit and the reference pulse generator are connected separately to the shapers; identical outputs of the latter are connected to the inputs of the responding flip-flop connected to the AND circuit and to the inputs of the univibrator start circuit connected by one output to the AND circuit and by the other to the first input of the inhibitor. The output of the AND circuit is connected to the second input of the inhibitor and to the OR circuit; the second input of the latter is connected to

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TURCHENKOV, L. P., et al., USSR Author's Certificate No 311262, filed 21 Oct 69, published 3 Nov 71

the output of the inhibitor, and the output of the OR circuit is connected via the commutator, connected to the comparison unit and the reference pulse generator, to the flip-flop cells of the light display. There are 3 illustrations.

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USSR

TURCHENKOV, Y. I.

UDC 621.374.333

"A Thyristor Distributor"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztzy, Tovarnyye Znaki,  
No 4, Feb 72, Author's Certificate No 326735, Division H, filed 26 Feb 70,  
published 19 Jan 72, p 215

Translation: This Author's Certificate introduces a thyristor distributor which contains a source of controlling pulses and cells, each of which contains a diode, a capacitor, and a first thyristor whose anode is connected through a resistor to the source of supply. As a distinguishing feature of the patent, the functional possibilities of the device are extended by adding a second thyristor in each cell. The controlling electrode of the second thyristor is connected through a diode to the output of the source of controlling pulses. The anode of the second thyristor is connected to the anode of the first thyristor, and the cathode of the second thyristor is connected through a capacitor to the controlling electrode of the first thyristor of the next cell.

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USSR

UDC 681.332.65

TURCHENKOV, V. I., and LYUBARSKAYA, I. D.

"Symmetrical Thyristor Commutator"

USSR Author's Certificate No 267691, filed 31 May 68, published 4 Aug 70  
(from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 6,  
Jun 71, Abstract No 6 B249 P)

Translation: A symmetrical thyristor commutator circuit has been patented which can be used to include one of  $n$  AC voltage loads in logical circuits. Switching devices (commutators) with thyristors in the load circuit and a thyristor control pulse shaper are well known. When the controlling load pulse is fed, the loads are connected in series to the DC voltage source. However, it is impossible to use these devices for commutation of alternating voltage loads. The proposed device is distinguished from the well-known ones by the fact that the controlling pulse shaper in it contains a programmed unit and a flip-flop connected to the AC voltage source, with a secondary winding having a grounded midpoint and two output ends connected to two identical circuits. The latter consists of two diodes connected in antiparallel, the anode of one of which is connected via the resistor to the dynistor cathode, to the anode of which the cathode

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TURCHENKOV, V. I., and LYUBARSKAYA, I. D., USSR Author's Certificate No 267691, filed 31 May 68, published 4 Aug 70 (from RZh-Avtomatika, Tele-mekhanika i Vychislitel'naya Tekhnika, No 6, Jun 71, Abstract No 6 B249 P)

of the second diode, the capacitance, and stabilatron grounded by its second output are connected. The cathodes of the two dynistors consisting of identical circuits are connected to each other by n parallel circuits of two opposing diodes the cathodes of which are connected via the primary winding to the outputs of the program unit. This construction of the commutator permits any of the n loads to be connected to the AC voltage source according to the given program.

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USSR

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UDC 547.834.4+541.634

MIKHLINA, YE. YE., YANINA, A. D., ALEKSEYEVA, L. M., TURECHIN, K. F., SHEYNKER, YU. N., YAKHONTOV, L. N., DYUK, R. F., RICHARD, A. YA., and KATRITSKIY, A. R.,  
All-Union Scientific Research Pharmaceutical Chemical Institute imeni S. Ordzhonikidze, Moscow and Chemistry Department, University of East Anglia at Norwich, Great Britain

"Reaction of Benzo [b]quinuclidine with Electrophilic Reagents"

Riga, Khimiya Geterotsiklicheskih Soyedineniy, Academy of Sciences Latvian SSR, No 3, 1971, pp 385-388

Abstract: Electrophilic substitution of benzo [b] quinuclidine (I) was studied: bromination, nitration, and sulfochlorination. These results are closely related to the absence of p- $\pi$  electron interaction in I. When I is brominated in several different solvents (acetic acid, chloroform) at 0, 20, and 60° (with or without catalysts), only the perbromide of I and a molecular complex of I with bromine were obtained. The absence of the p- $\pi$  mesomeric effect in I is shown by its pK. In contrast to bromination, nitration and sulfochlorination of I form products of electrophilic substitution. When I is treated with a nitrating mixture at temperatures from -4 to -7°, mononitrobenzo [b] quinuclidine is formed. When I is treated with chlorosulfonic acid, first at 0° and then at 50°, benzo [b]quinuclidine-sulfonyl chloride is formed.

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1/3 022 UNCLASSIFIED PROCESSING DATE--02OCT70  
TITLE--MECHANISM OF THE DIENE SYNTHESIS WITH 5,ALKOXYOAZOLES -U-

AUTHOR--(05)--DROBINSKAYA, N.A., IONOVA, L.V., KARPEISKIY, M.YA., PADOVUKOVA,  
N.S.H., TURCHIN, K.F.  
COUNTRY OF INFO--USSR

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